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Forest
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Subject: Sensitive Plant and Fungi Biological Evaluation Amendment For The Diamond Lake Restoration Project

To: Sherri Chambers, Team Leader

This amendment is necessary because of changes made earlier in the year to Survey and Manage Mitigation Measure Standards and Guidelines. Rare Bryophytes, Fungi, and Lichens were recently added to the Regional Sensitive Species List (USDA Forest Service, 2004). Prior to their inclusion on the list they were listed as Survey and Manage Species. On April 21, 2004, Survey and Manage Mitigation Measure Standards and Guidelines were removed from the Pacific Northwest Forest Plan. The Record of Decision (ROD) was signed on March 22 (USDA Forest Service and USDI Bureau of Land Management, 2004). The following is a description of how the decision affects projects, such as this, with surveys already started or completed (USDA Forest Service and USDI Bureau of Land Management, 2004):

“Surveys may have already been completed for individual projects. No additional survey work is required for projects that have fully complied with the current Survey and Manage Mitigation Measure Standards and Guidelines and existing Special Status Species Policies. Known sites of species formerly included in Survey and Manage that are included in the Special Status Species Programs will be managed under Special Status Species Policies. Known sites of Survey and Manage species not included in Special Status Species Programs will be released for other management uses after the effective date of this Record of Decision.

Surveys may have already been completed for individual projects. No additional survey work is required for projects that have fully complied with the current Survey and Manage Mitigation Measure Standards and Guidelines and existing Special Status Species Policies. Known sites of species formerly included in Survey and Manage that are included in the Special Status Species Programs will be managed under Special Status Species Policies. Known sites of Survey and Manage species not included in Special Status Species Programs will be released for other management uses after the effective date of this Record of Decision.”

There are now 61 Sensitive plants and fungi (includes lichens) currently documented or suspected to occur on the Umpqua National Forest. The entire list is given in Table 1.

Table 1. Documented or Suspected Sensitive Plants & Fungi on the Umpqua National Forest (USDA Forest Service, 2004) with project survey results and assessment of risk of contributing to a trend towards Federal listing or causing a loss of viability to the population or species.

Taxa Group and Species	Umpqua NF Status	Potential Habitat	Field Reconnaissance (Species Located?)	Risk Assessment (Conflict?)
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Bryophytes				
<i>Encalypta brevicolla</i> var. <i>crumiana</i>	Suspected	Yes	No	
<i>Rhizomnium nudum</i>	Documented	Yes	No	
<i>Schistostega pennata</i>	Documented	Yes	No	
<i>Scouleria marginata</i>	Documented	Yes	No	
<i>Tetraphis geniculata</i>	Suspected	Yes	No	
Fungi				
<i>Boletus pulcherrimus</i>	Documented	No		
<i>Cortinarius barlowensis</i>	Documented	Yes	No	
<i>Cudonia monticola</i>	Documented	No		
<i>Gomphus bonarii</i>	Documented	No		
<i>Gomphus kauffmanii</i>	Documented	No		
<i>Gyromitra californica</i>	Documented	Yes	No	
<i>Leucogaster citrinus</i>	Documented	Yes	No	
<i>Mycena monticola</i>	Documented	No		
<i>Ramaria amyloidea</i>	Documented	No		
<i>Ramaria aurantiiscescens</i>	Documented	No		
<i>Ramaria largentii</i>	Documented	Yes	No	
Lichens				
<i>Chaenotheca subroscida</i>	Documented	No		
<i>Dermatocarpon luridum</i>	Documented	No		
<i>Leptogium cyanescens</i>	Documented	Yes	No	
<i>Leptogium hirsutum</i> (L. <i>burnetiae</i> var. <i>h.</i>)	Suspected	Yes	No	
<i>Nephroma occultum</i>	Documented	Yes	No	
<i>Pannaria rubiginosa</i>	Suspected	No		
<i>Peltigera neckeri</i>	Documented	Yes	No	
<i>Peltigera pacifica</i>	Documented	Yes	Yes	No—Proposed Buffer Mitigation
<i>Pseudocyphellaria rainierensis</i>	Documented	Yes	No	
<i>Ramalina pollinaria</i>	Suspected	No		
<i>Usnea longissima</i>	Documented	Yes	No	
Vascular Plants				

<i>Arabis suffrutescens</i> var. <i>horizontalis</i>	Suspected	No		
<i>Arnica viscosa</i>	Documented	No		
<i>Asplenium septentrionale</i>	Documented	Yes	No	
<i>Aster vialis</i>	Suspected	Yes	No	
<i>Botrychium lanceolatum</i> ssp. <i>lanceolatum</i>	Suspected	Yes	No	
<i>Botrychium minganense</i>	Suspected	Yes	No	
<i>Botrychium pumicola</i>	Suspected	No		
<i>Calamagrostis breweri</i>	Suspected	No		
<i>Calochortus umpquaensis</i>	Documented	Yes	No	
<i>Carex crawfordii</i>	Suspected	Yes	No	
<i>Carex serratodens</i>	Suspected	Yes	No	
<i>Cimicifuga elata</i>	Documented	Yes	No	
<i>Collomia mazama</i>	Documented	No		
<i>Cypripedium fasciculatum</i>	Documented	Yes	No	
<i>Enemion stipitatum</i> (<i>Isopyrum</i> s.)	Suspected	Yes	No	
<i>Frasera umpquaensis</i>	Documented	Yes	No	
<i>Fritillaria glauca</i>	Documented	No		
<i>Gentiana newberryi</i> var. <i>newberryi</i>	Suspected	No		
<i>Hazardia whitneyi</i> var. <i>discoidea</i>	Documented	No		
<i>Iliamna latibracteata</i>	Documented	Yes	No	
<i>Kalmiopsis fragrans</i>	Documented	Yes	No	
<i>Lewisia columbiana</i> var. <i>columbiana</i>	Documented	Yes	No	
<i>Lewisia leana</i>	Suspected	No		
<i>Lupinus sulphureus</i> ssp. <i>kincaidii</i> *	Documented	Yes	No	
<i>Montia howellii</i>	Suspected	No		
<i>Ophioglossum pusillum</i>	Documented	Yes	No	
<i>Pellaea andromedifolia</i>	Suspected	No		
<i>Perideridia erythrorhiza</i>	Suspected	Yes	No	
<i>Polystichum californicum</i>	Documented	No		
<i>Romanzoffia thompsonii</i>	Documented	No		
<i>Scheuchzeria palustris</i> ssp. <i>americana</i>	Documented	No		
<i>Scirpus subterminalis</i>	Documented	No		
<i>Wolffia borealis</i>	Suspected	Yes	No	
<i>Wolffia columbiana</i>	Suspected	Yes	No	
*Federally Threatened Species				

Results of Field Reconnaissance

Lesser bladderwort (*Utricularia minor*) was found growing in the south shore Diamond Lake wetland complex as well as the south shore Lemolo Lake wetland. Although lesser bladderwort was proposed for listing as a Sensitive plant, it was never placed on the Regional Forester's list. It is considered a rare plant in Oregon by the Oregon Natural Heritage Program (2004). The Umpqua National Forest manages lesser bladderwort as a Sensitive species because it occurs in unique aquatic or wetland habitats.

Surveys to protocol for Survey and Manage flora requiring pre-habitat disturbing activities were conducted during the summer of 2003. Three rare Survey and Manage species were discovered within the project area during surveys; Two rare bryophytes adapted to wetland conditions that persist around Diamond Lake, along Silent Creek and Lake Creeks, and one fungus that seems to prefer wetland meadow edges.

Goblin's gold (*Schistostega pennata*) was a Survey and Manage category "A" moss requiring management of all known sites. It is now a Forest Service Sensitive Species for Oregon and Washington. Three sites are known on the Umpqua National Forest, two of which occur within this project area. The population along Silent Creek is the southern most known site on the west coast of North America. This species grows on soil, on the underside of rootwads of lodgepole pine that have tipped over in the wet unstable soils along Diamond Lake and in other wet meadows adjacent to Silent and Lake Creeks. The substrate and ecological niche this moss is adapted to is fairly specific and rare across the landscape. This is a morphologically unique moss because it appears to glow in the dark. The chloroplasts within the protonema are all congregating on one side of the cell wall giving the illusion of bioluminescence. The management recommendations for this species state that maintaining micro-climatic conditions and leaving rootwads intact are necessary for the persistence of the moss.

California elfin saddle (*Gyromitra californica*) was a Survey and Manage category "B" ascomycete fungus. It is now a Forest Service Sensitive Species for Oregon and Washington. This species has only been found in two locations (including this site) on the Umpqua National Forest and is known from 33 sites in the Pacific Northwest. It seems to prefer edges of wet meadows, at least on the Umpqua National Forest, as it has been found in these types of locations at both known sites. This species is not covered under the "Management Recommendations for Survey and Manage Fungi" (September, 1997) and there is no other known source to reference for this information. This species is a decomposer, and not mycorrhizal, so it is important to keep downed wood moist and intact where the fungus was found growing.

Determination of Effects

Introduction

This section discusses the direct, indirect and cumulative effects that may or may not occur to the Sensitive plants that were found during field surveys for this project. In addition to the main actions described under alternatives 2, 3 and 5, there are also two connected actions that the Diamond Lake Resort would like to accomplish while the draw down is occurring. Neither of

these connected actions will have any direct, indirect or cumulative effects on any Sensitive plant species.

Goblin's gold (*Schistostega pennata*)

Alternatives 1 & 4

Direct and Indirect Effects

These alternatives do not propose any draw down of Diamond Lake or associated affects to Lake Creek. The habitats for this Survey and Manage moss depends solely on these hydrologic systems and the humidity and habitat they create. These alternatives do not propose to alter any of these systems and would lead to no direct or indirect effects to goblin's gold.

Cumulative Effects

The scale at which cumulative effects are addressed is the 5th field watershed level for all alternatives. Past actions that may have had effects on this moss would be the 1954 rotenone treatment which drew down Diamond Lake and water rights which affect the levels and margins of Diamond Lake. The only current ongoing activity that may be affecting this population is the water rights that continue to impact the lake level of Diamond Lake. This action may actually be a positive effect to this moss because it keeps the habitat wet for longer each year, which seems to be necessary for the moss to persist. Under these two alternatives the only future foreseeable action that would have affects on this plant would be maintaining the water rights. Implementing either of these alternatives would not lead to any negative cumulative effects to goblin's gold, since no lake manipulation activities would occur.

Alternatives 2, 3 and 5

Direct and Indirect Effects

No direct effects are expected to occur as a result of implementing either of these alternatives. Indirect effects are likely to occur as a result of lowering Diamond Lake and drying the margins of the lake and the sedge meadow/fen systems along the south shore (Breedon, 2003, Kemmers and Jansen, 1988). Species of moist habitats (e.g. *Schistostega pennata*) are negatively impacted by even slight drying. According to Regional Bryophyte Taxa Expert, Judy Harpel, Ph.D., it is likely that *S. pennata* would return to the south shore sites as long as the populations along Silent and Lake Creeks remain as dispersal sources for future re-colonization.

Therefore there is a minimal risk that it would be extirpated from the south shore wetlands but populations would continue to persist along Silent Creek, Lake Creek, and near Lemolo Lake, as well as other populations outside of this project in the Kelsay Valley.

Cumulative Effects

The past, present and future actions that contribute to cumulative effects would be the same as described under alternatives 1 and 4 for this species. Implementing these alternatives may lead to negative cumulative effects, when combined with the past, present, and reasonably foreseeable effects, as continued drying may impact the habitat for this species. However, it is thought that these populations would re-establish after a few years, as long as there is a source for re-

colonization. The populations up Silent Creek would not be impacted and would provide a source for dispersal and re-colonization. In addition, mitigation such as watering the stump holes would facilitate maintenance of a portion of the affected individuals throughout the draw period and would promote re-colonization.

California elfin saddle (*Gyromitra californica*)

Alternatives 1 & 4

Direct and Indirect Effects

These alternatives do not propose any draw down of Diamond Lake or associated affects to Lake Creek. The habitats for this Survey and Manage fungus depend on these hydrologic systems and the humidity and habitat they create. These alternatives do not propose to alter any of these systems and would lead to no direct or indirect effects to California elfin saddle.

Cumulative Effects

The scale at which cumulative effects are addressed is the 5th field watershed level for all alternatives. Past actions that may have had affects on this fungus would be the 1954 rotenone treatment which drew down Diamond Lake and may have affected Lake Creek. No current activities are affecting the populations of this species. Under these two alternatives there are no future foreseeable projects that would affect this species. Implementing either of these alternatives is not likely to lead to any negative cumulative effects when combined with past, present, and reasonably foreseeable actions described for California elfin saddle.

Alternatives 2, 3 and 5

Direct and Indirect Effects

No direct effects are expected to occur as a result of implementing either of these alternatives. There is potential for indirect effects to occur if Lake Creek floods or dries significantly enough to dry out the areas where the fungus is growing. There is minimal risk that this would occur. With the minimal risk present, it is likely that no indirect effects would occur to this fungus.

Cumulative Effects

The past, present and future actions that contribute to cumulative effects would be the same as described under alternatives 1 and 4 for this species. Implementing these alternatives may lead to negative cumulative effects when combined with the past, present, and reasonably foreseeable actions for California elfin saddle. There is minimal risk that negative effects would occur and it would take a one hundred year flood or severe drying much worse than anticipated to produce those effects. However, if this site is extirpated it is the only known site in the watershed and would produce significant cumulative effects at this scale. There is one other known site in the Fish Creek Desert area, 13 miles to the west. However, with the minimal risk associated with these alternatives, it is anticipated that no cumulative effects would occur.

American Scheuchzeria (*Scheuchzeria palustris* ssp. *americana*)

Alternatives 1 & 4

Direct & Indirect Effects

Neither of these alternatives propose activities that would jeopardize this population of American scheuchzeria. Alternative 4 responds to the issue of wetland ecology and conservation of the rare flora and fauna associated with them. This species is a wetland obligate species that is dependent on the fen ecosystem. These alternatives do not plan any alteration of that system. No direct or indirect effects would occur under these alternatives.

Cumulative Effects

The scale at which cumulative effects are addressed is the 5th field watershed level. The only past action that may have had affects on this population would be the 1954 Rotenone treatment which drew down Diamond Lake and subsequently dried Lake Creek. This is only speculative however and the population seems to be fully recovered if any negative effects did indeed occur. The only current ongoing activity that may be affecting this population is the water rights that change flow of Lake Creek from natural historic flows. The influence of this water manipulation has obviously not been enough to negatively impact this population to date. Under these two alternatives no future foreseeable projects would have any affects on this population of American scheuchzeria. When coupled with the aforementioned effects, implementing either of these alternatives is not likely to lead to any negative cumulative effects to this population of American scheuchzeria, which is the only known population within the entire Umpqua basin.

Alternatives 2, 3 & 5

Direct and Indirect Effects

None of the actions proposed in these alternatives would cause direct effects to this plant population. Indirect effects may occur if potential flooding and drying would occur in Lake Creek. However it is likely that this fen is dependent upon springs and groundwater. It is unknown how much this fen depends on water from Lake Creek to keep it wet year round. If significant flooding or drying does occur there is potential for individual plants to be uprooted and washed downstream as well as for individual plants to desiccate. Neither of these scenarios would necessarily lead to extirpation of this population. Flooding is a natural occurrence and may actually help distribute the plant to new locations. Drying is not likely to affect this species or the fen, which is raised a little above the stream terrace. No indirect effects are expected to occur due to these inferences. However there is minimal risk that negative effects could occur in a worse case scenario.

Cumulative Effects

The scale at which cumulative effects are addressed is the 5th field watershed level. The past, present and reasonably foreseeable actions contributing to cumulative effects are the same as those described under alternatives 1 and 4. Under these alternatives there is minimal risk that this project would have any affects on this population of American scheuchzeria. When coupled with the aforementioned effects, implementing either of these alternatives is not likely to lead to any negative cumulative effects to this population of American scheuchzeria.

water bulrush (*Scirpus subterminalis*)

Alternatives 1 & 4

Direct and Indirect Effects

Neither of these alternatives propose activities that would jeopardize these populations of water bulrush. Alternative 4 responds to the issue of wetland ecology and conservation of the rare flora and fauna associated with them. This species is a wetland obligate species that is dependent on lake margins and fen ecosystems with areas of shallow water. These alternatives do not plan any alteration of these systems. No direct or indirect effects would occur under these alternatives.

Cumulative Effects

The scale at which cumulative effects are addressed is the 5th field watershed level. Past actions that may have had effects on this plant would be the 1954 Rotenone treatment which drew down Diamond Lake and water rights which affect the levels and margins of Diamond Lake. The only current ongoing activity that may be affecting this population is the water rights that continue to impact the lake margins of Diamond Lake. The influence of this water manipulation has possibly caused populations of water bulrush to stay in a juvenile state, potentially halting reproduction. By keeping the water at a steady high level the margin of Diamond Lake has not naturally receded, an event which would open habitat for this species. Under these two alternatives the only future foreseeable action that would have effects on this plant would be maintaining the water rights. When coupled with the aforementioned effects, implementing either of these alternatives is not likely to lead to any negative cumulative effects to this population of water-bulrush.

Alternatives 2, 3 and 5

Direct and Indirect Effects

No direct effects are expected to occur as a result of implementing these alternatives. Indirect effects are likely to occur as a result of lowering Diamond Lake and drying the margins of the lake, the Sedge Meadow/Fen systems along the south shore, and the potential drying of Teal lake (Kemmers and Jansen, 1988). This will almost certainly lead to some desiccation of plants from the drying of their habitat. Whether these effects would be long term is unknown, but it is anticipated that the water bulrush will likely return within five years.

Cumulative Effects

The scale at which cumulative effects are addressed is the 5th field watershed level. The past, present and reasonably foreseeable actions contributing to cumulative effects are the same as those described under alternatives 1 and 4. When coupled with the aforementioned effects, implementing these alternatives is likely to lead to negative cumulative effects to this population of water-bulrush. This is because the extended drying of the plants habitat proposed with these alternatives, as well as the 1954 treatment and the manipulation of lake water levels are effects that have and would continue to negatively impact this Sensitive plant by drying its habitat. This effect would lead to some loss of individual plants and may compromise reproductive ability of the species. It is anticipated however, that these plant populations would recover relatively soon because the period of plant desiccation would not occur any longer than one season.

Lesser bladderwort (*Utricularia minor*)

Alternatives 1 & 4

Direct and Indirect Effects

Neither of these alternatives propose activities that would jeopardize these populations of lesser bladderwort. Alternative 4 responds to the issue of wetland ecology and conservation of the rare flora and fauna associated with them. This species is a wetland obligate species that is dependent on sedge meadow/fen ecosystems with areas of shallow water. These alternatives do not plan any alteration of these systems. No direct or indirect effects would occur under these alternatives.

Cumulative Effects

The scale at which cumulative effects are addressed is the 5th field watershed level. Past actions that may have had effects on this plant would be the 1954 Rotenone treatment which drew down Diamond Lake and the implementation of Lemolo 1 hydropower projects. The only current ongoing activity that may be affecting this population is the Lemolo 1 hydropower projects which fluctuate water at Lemolo Lake. These actions have not resulted in the complete extirpation of this species from the area, but they have likely significantly reduced the amount of habitat. Under these two alternatives the only future foreseeable action that would have effects on this plant would be the continued operation of the Lemolo 1 hydro project. When coupled with the aforementioned effects, implementing either of these alternatives is not likely to lead to any negative cumulative effects to these populations of lesser-bladderwort.

Alternatives 2, 3 & 5

Direct and Indirect Effects

No direct effects are expected to occur as a result of implementing these alternatives. Indirect effects are likely to occur as a result of lowering Diamond Lake and drying the sedge meadow/fen ecosystems along the south shore of Diamond Lake (Breedon, 2003, Kemmers and Jansen, 1988). Desiccation is expected in some plants as a result of prolonged drying of the habitat. Whether these effects will be long term is unknown, but it is anticipated that the lesser bladderwort would likely return in a relatively short amount of time.

Cumulative Effects

The past, present and reasonably foreseeable actions contributing to cumulative effects are the same as those described under alternatives 1 and 4. When combined with the past, present, and reasonably foreseeable actions, implementing these alternatives is likely to lead to negative cumulative effects to some of the populations of lesser bladderwort due to the potential of prolonged drying of their habitat. It is likely that the 1954 draw down combined with the proposed draw down would cause drying and desiccation to lesser bladderwort populations on the south shore of Diamond Lake. A loss of individual plants is expected and there may be a loss of vigor within the entire population which already seems to be only barely holding on. The populations at the south end of Lemolo Lake would likely not be impacted by these alternatives.

References

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- Oregon Natural Heritage Program. 2004. Rare Vascular Plant List of Oregon. Oregon Natural Heritage Program, Portland, Oregon.
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- USDA Forest Service and USDI Bureau of Land Management. 2004. Record of Decision to Remove or Modify the Survey and Manage Mitigation Measure Standards and Guidelines in Forest Service and Bureau of Land Management Planning Documents Within the Range of the Northern Spotted Owl. Portland, Oregon.

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